# Speech flexibility following oral cancer treatment: acoustic and kinematic explorations

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| **Ethical review** | Approved WMO |
| **Status** | Completed |
| **Health condition type** | Head and neck therapeutic procedures |
| **Study type** | Observational invasive |

## Summary

### ID

NL-OMON54265

**Source**
ToetsingOnline

**Brief title**
Articulatory adaptation following oral cancer treatment

### Condition

- Head and neck therapeutic procedures

**Synonym**
dysarthria, Pathological speech

**Research involving**
Human

### Sponsors and support

**Primary sponsor:** Universitair Medisch Centrum Groningen
**Source(s) of monetary or material Support:** Ministerie van OC&W

## Intervention

**Keyword:** Articulation, Dysarthria, Oral cancer, Speech

## Outcome measures

### Primary outcome

The main study parameters are the articulatory trajectories of the tongue, the lips and the jaw during the production of speech of patients and controls as measured by electromagnetic articulography (EMA). The amplitude, velocity and stiffness of these movements will be analysed. In addition, compensation to auditory and tactile feedback perturbation will be studied.

### Secondary outcome

Acoustic measures of speech (e.g., intensity, speech rate, and spectral moments of specific sounds).

# Study description

### Background summary

Among all cancers, treatment of oral cancer has one of the highest risks in developing problems with important functions like speaking and swallowing. Problems with speaking, or articulating well, can have a negative impact on the quality of life of patients as it complicates communication. Moreover, patients rank the ability to 'speak clearly' as one of their top-5 priorities. Yet, the speech problems induced by oral cancer treatment are not well understood, especially in terms of quantitative changes in articulation. This results in the near absence of guidelines for speech therapy post-treatment. The proposed research will shed more light on the articulatory changes. With its longitudinal design and a focus on compensatory strategies, the results of this study will become available to clinicians and speech therapists, who will be able to use the results of the study to set up evidence-based guidelines for speech therapy or minimise the negative effects during treatment.

### Study objective

The objective of this study is to investigate the coordination and development of speech articulation of patients who will undergo surgical treatment for oral cancer longitudinally and whether individual differences in the reliance on auditory or tactile information can predict the success of speech compensatory strategies.

**Study design**

The study in question is a longitudinal prospective study with an additional cross-sectional cohort. Data will be collected using both acoustic (i.e., speech recordings) and articulatory methods (electromagnetic articulograhphy). Participants will perform several speech tasks, some under normal feedback conditions (i.e., what they hear or feel in their mouth when speaking will not be changed), others while the auditory or tactile feedback is altered. During these tasks, the speech signal will be recorded with a microphone while the participant will be wearing headphones. Articulatory trajectories will be recorded using electromagnetic articulography (EMA) in normal conditions and with (pink) noise. In parallel, the speech signal will also be recorded with a microphone. The data from the oral cancer patients will be compared to non-speech disturbed controls and to earlier evaluation points.

**Study burden and risks**

No known risks or benefits are associated with participating in this study.

# Contacts

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# Trial sites

### Listed location countries

Netherlands

## Eligibility criteria

**Age**
Adults (18-64 years)
Elderly (65 years and older)

### Inclusion criteria

1. Diagnosed with or treated for a T1 or T2 tumor in the oral cavity
2. At least 18 years old and able to provide informed consent
3. Native speaker of Dutch
4. Has nog been treated for oral cancer before

### Exclusion criteria

1a. Recurrence of disease (for patients)
1b. Treated for oral cancer (for healthy controls)
2. Speech problems (e.g., stuttering)
3. Problems with sight or hearing that impede reading or understanding instructions. When glasses or a hearing aid
resolve these problems, then participants are not excluded.
4. Neurological or psychological disorders (e.g., stroke)
5. Non-removable metal in, on or around the head (piercings, braces, pacemaker, electrodes)
6. Self-reported signs of depression

## Study design

### Design

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| Study type: | Observational invasive |
| Intervention model: | Other |
| Allocation: | Non-randomized controlled trial |
| Masking: | Open (masking not used) |

**Primary purpose:** Diagnostic

### Recruitment

NL

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| Recruitment status: | Completed |
| Start date (anticipated): | 10-11-2022 |
| Enrollment: | 50 |
| Type: | Actual |

## Ethics review

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| Approved WMO Date: | 11-04-2022 |
| Application type: | First submission |
| Review commission: | METC Universitair Medisch Centrum Groningen (Groningen) |
| Approved WMO Date: | 21-06-2023 |
| Application type: | Amendment |
| Review commission: | METC Universitair Medisch Centrum Groningen (Groningen) |
| Approved WMO Date: | 13-06-2024 |
| Application type: | Amendment |
| Review commission: | METC Universitair Medisch Centrum Groningen (Groningen) |

## Study registrations

### Followed up by the following (possibly more current) registration

No registrations found.

### Other (possibly less up-to-date) registrations in this register

No registrations found.

## In other registers

| Register | ID |
| --- | --- |
| ClinicalTrials.gov | NCT05876247 |
| CCMO | NL79242.042.21 |